

CLAIMS:

1. A method of implementing a microcircuit, the method comprising the steps of:

- 5 (a) fabricating an interconnection network on a substrate having a first side and a second side;
- (b) mounting one or more active components to the first side of the substrate;
- 10 (c) sealing hermetically the one or more active components with a cover;
- (d) mounting one or more passive components to the second side of the substrate in such a manner that the one or more passive components are removable and replaceable;
- (e) testing the microcircuit for a desired performance; and
- (f) removing and replacing, as necessary, one or more of the one or more passive components so as to achieve the desired performance.

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2. The method as set forth in claim 1, wherein step (a) includes -

- (a₁) cutting one or more tape layers from a roll of a ceramic tape substrate material;
- 20 (a₂) drilling one or more holes through the substrate to allow for electrically interconnecting the one or more active components and the one or more passive components;
- (a₃) printing and drying a via fill;
- (a₄) printing and drying one or more connectors;
- (a₅) collating and laminating the interconnection network;
- 25 (a₆) cofiring one or more conductors;
- (a₇) printing, drying, and firing one or more conductors and one or more resistors;
- (a₈) trimming the one or more resistors; and
- (a₉) scribing the interconnection network.

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3. The method as set forth in claim 1, wherein step (b) includes -
(b₁) cleaning the interconnection network to facilitate proper mounting of
the one or more active components;
5 (b₂) dispensing an adhesive onto one or more predetermined locations on
the first side of the substrate;
(b₃) positioning the one or more active components so as to contact the
adhesive;
(b₄) curing the adhesive; and
10 (b₅) wire-bonding the one or more active components.
4. The method as set forth in claim 1, wherein step (d) includes -
(d₁) dispensing a solder onto one or more predetermined soldering sites on
the second side of the substrate;
15 (d₂) positioning the one or more passive components so as to contact the
solder;
(d₃) reflowing the solder; and
(d₄) cleaning any solder flux residue from the microcircuit.
5. The method as set forth in claim 1, wherein the microcircuit is a multi-
20 chip module.
6. The method as set forth in claim 1, wherein the substrate is a low-
temperature co-fired ceramic.
- 25 7. The method as set forth in claim 1, wherein the one or more active
components are selected from the group consisting of: integrated circuits, transistors,
and diodes.
8. The method as set forth in claim 1, wherein the one or more passive
30 components include one or more passive surface mount components.

9. The method as set forth in claim 1, wherein the one or more passive surface components are selected from the group consisting of: capacitors, resistors, inductors, and memory modules.

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10. A method of implementing a design for a multi-chip module, the method comprising the steps of:

- (a) fabricating an interconnection network on a low-temperature co-fired ceramic substrate having a first side and a second side;
- 5 (b) wire-bonding one or more integrated circuits to the first side of the low-temperature co-fired ceramic substrate;
- (c) sealing hermetically the one or more active components with a cover;
- (d) reflow-soldering one or more passive surface mount components to the second side of the low-temperature co-fired ceramic substrate in such a manner that the one or more passive surface mount components are removable and replaceable;
- 10 (e) connecting the one or more integrated circuits with the one or more passive surface mount components through one or more vias in the low-temperature co-fired ceramic substrate;
- 15 (f) testing the microcircuit for a desired performance; and
- (g) removing and replacing, as necessary, one or more of the one or more passive surface mount components so as to achieve the desired performance.

20 11. The method as set forth in claim 10, wherein the one or more passive surface mount components are selected from the group consisting of: capacitors, resistors, inductors, and memory modules.

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12. A method of implementing a microcircuit, the method comprising the steps of:

- (a) fabricating an interconnection network on a substrate having a first side and a second side;
- 5 (b) wire-bonding one or more active components to the first side of the substrate;
- (c) sealing hermetically the one or more active components with a cover;
- (d) mounting one or more passive components to the second side of the substrate in such a manner that the one or more passive
- 10 components are removable and replaceable;
- (e) testing the microcircuit for a desired performance; and
- (f) removing and replacing, as necessary, one or more of the one or more passive components so as to achieve the desired performance.

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13. A method of implementing a microcircuit, the method comprising the steps of:

- (a) fabricating an interconnection network on a substrate having a first side and a second side;
- 5 (b) mounting one or more active components to the first side of the substrate;
- (c) sealing hermetically the one or more active components with a cover;
- (d) reflow-soldering one or more passive components to the second side of the substrate so that the one or more passive components
- 10 are removable and replaceable;
- (e) testing the microcircuit for a desired performance; and
- (f) removing and replacing, as necessary, one or more of the one or more passive components so as to achieve the desired performance.

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14. A method of implementing a microcircuit, the method comprising the steps of:

- (a) fabricating an interconnection network on a substrate having a first side and a second side;
- 5 (b) mounting one or more active components to the first side of the substrate;
- (c) sealing hermetically the one or more active components with a cover;
- (d) mounting one or more passive components to the second side of the substrate in such a manner that the one or more passive components are removable and replaceable;
- 10 (e) connecting the one or more active components with the one or more passive components through vias in the substrate;
- (f) testing the microcircuit for a desired performance; and
- (g) removing and replacing, as necessary, one or more of the one or more passive components so as to achieve the desired performance.
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15. A method of implementing a microcircuit, the method comprising the steps of:

- (a) fabricating an interconnection network on a substrate having a first side and a second side;
- 5 (b) mounting one or more active components to the first side of the substrate;
- (c) sealing hermetically the one or more active components with a cover;
- (d) mounting one or more passive components to the second side of the substrate in such a manner that the one or more passive components are removable and replaceable;
- 10 (e) connecting the one or more active components with the one or more passive components using one or more edge connectors;
- (f) testing the microcircuit for a desired performance; and
- (g) removing and replacing, as necessary, one or more of the one or more passive components so as to achieve the desired performance.
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